

D-18

Talc, NTP TR 421

TABLE D2

Individual Animal Tumor Pathology of Female Mice in the 2-Year Inhalation Study of Talc: 18 mg/m³

Number of Days on Study	0 0 0 0 0 0 0 4 5 5 5 5 5 5 6 6 6 6 6 6 6 7 7 7
	2 2 2 2 2 2 2 7 0 1 4 5 5 6 8 4 4 5 6 6 8 9 0 1 1
	0 8 8 8 8 8 8 3 8 6 8 4 8 9 1 2 6 5 1 5 6 2 6 6 8
Carcass ID Number	2 1 2 2 2 2 3 3 2 2 3 3 3 2 3 2 3 2 2 2 2 2 2 2
	9 9 0 0 0 0 4 4 0 3 1 5 6 7 2 3 5 2 2 3 6 9 6 5
	2 6 1 3 4 6 7 9 6 2 9 6 3 0 0 8 2 2 7 8 6 6 6 7 9
	1 1
Alimentary System	
Esophagus	+ + + + + M + + M + + + + + + + + + + + + + +
Gallbladder	A M M A A A M M + M A A A + A A + A A A + + A +
Intestine large	A A A + + A A + + A + A + A + A + A A A + + A A +
Intestine large, cecum	A A A + A A A + + A + A A A + A + A A A + + A A +
Leiomyoma	
Intestine large, colon	A A A + A A A I + A + A A A + A A A A + + A A +
Intestine large, rectum	A A A + + A A M I M M A + A + A + M A M + + M A +
Intestine small	A A A + A A A + + A + A + A + A + A A A A + A A +
Intestine small, duodenum	A A A + A A A + + A M A A A + A A A A A + A A +
Intestine small, ileum	A A A A A A A + A A + A A A + A + A A A A + A A +
Intestine small, jejunum	A A A + A A A + A A A A + A + A A A A A + A A +
Liver	+ +
Hepatocellular carcinoma	
Hepatocellular adenoma	
Pancreas	A + + + M A + + + A + + + A + + + + + + + + + A +
Salivary glands	+ +
Stomach	+ +
Stomach, forestomach	+ +
Stomach, glandular	+ + + + + + + + A + + A I + + + + A + + + + + + +
Cardiovascular System	
Heart	+ +
Endocrine System	
Adrenal gland	+ +
Adrenal gland, cortex	+ +
Adrenal gland, medulla	+ I I M + + I + + + + + + + + + + + + + + + +
Islets, pancreatic	A + + I M A M + + M M + + I I M + + + M I I + A +
Parathyroid gland	+ M M + + M M M M M + + + + M M + + I + M M + + +
Pituitary gland	+ + + + M I + + + + + + + + + + + + + + + + + +
Adenoma	
Thyroid gland	+ + M +
Follicular cell, adenoma	
General Body System	
Tissue NOS	+
Hemangioma	
Hemangiosarcoma	X

NOT FOR DISTRIBUTION OR ATTRIBUTION

Board Draft

D-20

Talc, NTP TR 421

TABLE D2

Individual Animal Tumor Pathology of Female Mice in the 2-Year Inhalation Study of Talc: 18 mg/m³ (continued)

	0	0	0	0	0	0	0	4	5	5	5	5	5	5	5	6	6	6	6	6	6	7	7	7
Number of Days on Study	2	2	2	2	2	2	7	0	1	4	5	5	6	8	4	4	5	6	6	8	9	0	1	1
	0	8	8	8	8	8	3	8	6	8	4	8	9	1	2	6	5	1	5	6	2	6	6	8
	2	1	2	2	2	2	3	3	2	2	3	3	3	2	3	2	3	2	2	2	2	2	2	2
Carcass ID Number	9	9	0	0	0	0	4	4	0	3	1	5	6	7	2	3	5	2	2	3	6	9	6	5
	2	6	1	3	4	6	7	9	6	2	9	6	3	0	0	8	2	2	7	8	6	6	6	7
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Genital System																								
Ovary	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	I	+	M	+	+	M	+	+	+
Uterus	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Carcinoma adenosquamous																								
Hematopoietic System																								
Bone marrow	+	+	+	+	+	+	+	A	+	A	A	+	+	A	A	+	+	+	+	+	+	+	+	+
Lymph node	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph node, bronchial	M	M	M	+	M	M	M	+	I	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymph node, mandibular	+	M	M	M	+	+	+	+	+	+	+	M	M	+	+	+	+	+	+	+	+	+	+	+
Lymph node, mediastinal	M	M	M	M	M	M	M	M	M	+	M	M	M	M	M	M	+	+	+	M	+	M	+	+
Lymph node, mesenteric	M	M	A	+	M	M	M	+	A	+	A	+	+	+	M	+	+	+	+	M	+	M	+	+
Spleen	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Hemangiosarcoma																								
Thymus	M	M	+	M	+	+	M	M	+	+	+	+	+	+	+	+	+	+	+	+	M	+	+	M
																								I
Integumentary System																								
Mammary gland	+	+	M	+	+	+	+	+	+	+	+	I	+	+	+	+	+	+	+	+	+	+	+	+
Fibrosarcoma																								
Skin	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Musculoskeletal System																								
Bone	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Nervous System																								
Brain	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Spinal cord																								
Thoracic, ganglioneuroma																								
Respiratory System																								
Larynx	+	+	M	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lung	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Alveolar/bronchiolar adenoma												X												
Alveolar/bronchiolar carcinoma																X								
Hemangiosarcoma, metastatic, tissue NOS												X												
Nose	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Trachea	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	A	+	M	+	+	+	+	+	+

NOT FOR DISTRIBUTION OR ATTRIBUTION

Board Draft

D-22

Talc, NTP TR 421

TABLE D2

Individual Animal Tumor Pathology of Female Mice in the 2-Year Inhalation Study of Talc: 18 mg/m³ (continued)

Number of Days on Study	0	0	0	0	0	0	0	4	5	5	5	5	5	5	5	6	6	6	6	6	6	6	7	7	7
	2	2	2	2	2	2	7	0	1	4	5	5	6	8	4	4	5	6	6	8	9	0	1	1	
	0	8	8	8	8	8	8	3	8	6	8	4	8	9	1	2	6	5	1	5	6	2	6	6	8
Carcass ID Number	2	1	2	2	2	2	3	3	2	2	3	3	3	2	3	2	3	2	2	2	2	2	2	2	2
	9	9	0	0	0	0	4	4	0	3	1	5	6	7	2	3	5	2	2	3	6	9	6	5	
	2	6	1	3	4	6	7	9	6	2	9	6	3	0	0	8	2	2	7	8	6	6	6	7	9
	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Special Senses System																									
Harderian gland																									+
Adenocarcinoma																									X
Urinary System																									
Kidney	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Urinary bladder	A	A	+	+	+	+	A	+	+	+	+	A	+	+	+	A	+	A	+	+	A	+	A	A	+
Systemic Lesions																									
Multiple organs	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+	+
Lymphoma malignant histiocytic																									X
Lymphoma malignant lymphocytic																									
Lymphoma malignant mixed																									X
Lymphoma malignant undifferentiated cell type																									X

NOT FOR DISTRIBUTION OR ATTRIBUTION

Board Draft

D-24

Talc, NTP TR 421

TABLE D3

Statistical Analysis of Primary Neoplasms in Female Mice in the 2-Year Inhalation Study of Talc

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Liver: Hepatocellular Adenoma			
Overall rates ^a	5/46 (11%)	1/47 (2%)	4/50 (8%)
Adjusted rates ^b	16.7%	4.3%	14.0%
Terminal rates ^c	5/30 (17%)	1/23 (4%)	2/25 (8%)
First incidence (days)	729 (T)	729 (T)	581
Life table tests ^d	P=0.565	P=0.169N	P=0.602N
Logistic regression tests ^d	P=0.603N	P=0.169N	P=0.539N
Cochran-Armitage test ^d	P=0.523N		
Fisher exact test ^d		P=0.097N	P=0.447N
Liver: Hepatocellular Carcinoma			
Overall rates	7/46 (15%)	5/47 (11%)	4/50 (8%)
Adjusted rates	19.1%	18.4%	15.4%
Terminal rates	3/30 (10%)	3/23 (13%)	3/25 (12%)
First incidence (days)	426	645	718
Life table tests	P=0.308N	P=0.487N	P=0.344N
Logistic regression tests	P=0.243N	P=0.372N	P=0.255N
Cochran-Armitage test	P=0.197N		
Fisher exact test		P=0.364N	P=0.216N
Liver: Hepatocellular Adenoma or Carcinoma			
Overall rates	11/46 (24%)	6/47 (13%)	7/50 (14%)
Adjusted rates	31.1%	22.5%	25.2%
Terminal rates	7/30 (23%)	4/23 (17%)	5/25 (20%)
First incidence (days)	426	645	581
Life table tests	P=0.329N	P=0.262N	P=0.330N
Logistic regression tests	P=0.253N	P=0.147N	P=0.227N
Cochran-Armitage test	P=0.184N		
Fisher exact test		P=0.131N	P=0.163N
Lung: Alveolar/bronchiolar Adenoma			
Overall rates	3/46 (7%)	2/49 (4%)	2/50 (4%)
Adjusted rates	10.0%	6.7%	6.4%
Terminal rates	3/30 (10%)	1/23 (4%)	1/25 (4%)
First incidence (days)	729 (T)	559	548
Life table tests	P=0.505N	P=0.589N	P=0.562N
Logistic regression tests	P=0.467N	P=0.499N	P=0.515N
Cochran-Armitage test	P=0.425N		
Fisher exact test		P=0.470N	P=0.460N
Lung: Alveolar/bronchiolar Carcinoma			
Overall rates	2/46 (4%)	4/49 (8%)	1/50 (2%)
Adjusted rates	6.7%	11.6%	2.6%
Terminal rates	2/30 (7%)	0/23 (0%)	0/25 (0%)
First incidence (days)	729 (T)	491	558
Life table tests	P=0.383N	P=0.286	P=0.539N
Logistic regression tests	P=0.325N	P=0.356	P=0.500N
Cochran-Armitage test	P=0.309N		
Fisher exact test		P=0.369	P=0.468N

NOT FOR DISTRIBUTION OR ATTRIBUTION

Board Draft

Lesions in Female Mice

D-25

TABLE D3

Statistical Analysis of Primary Neoplasms in Female Mice in the 2-Year Inhalation Study of Tale (continued)

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Lung: Alveolar/bronchiolar Adenoma or Carcinoma			
Overall rates	5/46 (11%)	6/49 (12%)	3/50 (6%)
Adjusted rates	16.7%	17.5%	8.9%
Terminal rates	5/30 (17%)	1/23 (4%)	1/25 (4%)
First incidence (days)	729 (T)	491	548
Life table tests	P=0.337N	P=0.394	P=0.428N
Logistic regression tests	P=0.269N	P=0.519	P=0.367N
Cochran-Armitage test	P=0.235N		
Fisher exact test		P=0.545	P=0.311N
Ovary: Luteoma			
Overall rates	2/38 (5%)	0/43 (0%)	0/46 (0%)
Adjusted rates	8.0%	0.0%	0.0%
Terminal rates	2/25 (8%)	0/21 (0%)	0/24 (0%)
First incidence (days)	729 (T)	- ^e	-
Life table tests	P=0.177N	P=0.277N	P=0.246N
Logistic regression tests	P=0.177N	P=0.277N	P=0.246N
Cochran-Armitage test	P=0.146N		
Fisher exact test		P=0.217N	P=0.202N
Pituitary Gland (Unspecified Site): Adenoma			
Overall rates	5/42 (12%)	4/43 (9%)	2/48 (4%)
Adjusted rates	15.1%	18.2%	7.1%
Terminal rates	2/30 (7%)	4/22 (18%)	1/25 (4%)
First incidence (days)	683	729 (T)	665
Life table tests	P=0.239N	P=0.610	P=0.290N
Logistic regression tests	P=0.189N	P=0.604N	P=0.220N
Cochran-Armitage test	P=0.133N		
Fisher exact test		P=0.485N	P=0.166N
Pituitary Gland (Unspecified Site): Carcinoma			
Overall rates	0/42 (0%)	2/43 (5%)	0/48 (0%)
Adjusted rates	0.0%	5.5%	0.0%
Terminal rates	0/30 (0%)	0/22 (0%)	0/25 (0%)
First incidence (days)	-	534	-
Life table tests	P=0.591N	P=0.237	- ^f
Logistic regression tests	P=0.515N	P=0.274	-
Cochran-Armitage test	P=0.542N		
Fisher exact test		P=0.253	-
Pituitary Gland (Unspecified Site): Adenoma or Carcinoma			
Overall rates	5/42 (12%)	6/43 (14%)	2/48 (4%)
Adjusted rates	15.1%	22.7%	7.1%
Terminal rates	2/30 (7%)	4/22 (18%)	1/25 (4%)
First incidence (days)	683	534	665
Life table tests	P=0.216N	P=0.352	P=0.290N
Logistic regression tests	P=0.150N	P=0.451	P=0.220N
Cochran-Armitage test	P=0.111N		
Fisher exact test		P=0.517	P=0.166N

Board Draft

NOT FOR DISTRIBUTION OR ATTRIBUTION

D-26

Talc, NTP TR 421

TABLE D3
Statistical Analysis of Primary Neoplasms in Female Mice in the 2-Year Inhalation Study of Talc (continued)

	0 mg/m ³	6 mg/m ³	18 mg/m ³
All Organs: Hemangioma or Hemangiosarcoma			
Overall rates	2/46 (4%)	1/49 (2%)	3/50 (6%)
Adjusted rates	6.7%	4.3%	10.1%
Terminal rates	2/30 (7%)	1/23 (4%)	2/25 (8%)
First incidence (days)	729 (T)	729 (T)	473
Life table tests	P=0.323	P=0.593N	P=0.434
Logistic regression tests	P=0.356	P=0.593N	P=0.495
Cochran-Armitage test	P=0.399		
Fisher exact test		P=0.476N	P=0.540
All Organs: Malignant Lymphoma (Histiocytic, Lymphocytic, Mixed, or Undifferentiated Cell Type)			
Overall rates	7/46 (15%)	7/49 (14%)	8/50 (16%)
Adjusted rates	21.3%	26.7%	27.4%
Terminal rates	5/30 (17%)	5/23 (22%)	5/25 (20%)
First incidence (days)	509	628	642
Life table tests	P=0.358	P=0.454	P=0.387
Logistic regression tests	P=0.406	P=0.607	P=0.463
Cochran-Armitage test	P=0.514		
Fisher exact test		P=0.563N	P=0.571
All Organs: Benign Tumors			
Overall rates	18/46 (39%)	9/49 (18%)	10/50 (20%)
Adjusted rates	54.5%	36.4%	33.0%
Terminal rates	15/30 (50%)	8/23 (35%)	6/25 (24%)
First incidence (days)	683	559	548
Life table tests	P=0.148N	P=0.125N	P=0.145N
Logistic regression tests	P=0.094N	P=0.044N	P=0.071N
Cochran-Armitage test	P=0.050N		
Fisher exact test		P=0.022N	P=0.033N
All Organs: Malignant Tumors			
Overall rates	19/46 (41%)	19/49 (39%)	15/50 (30%)
Adjusted rates	51.9%	55.4%	45.6%
Terminal rates	13/30 (43%)	9/23 (39%)	8/25 (32%)
First incidence (days)	426	491	473
Life table tests	P=0.372N	P=0.340	P=0.441N
Logistic regression tests	P=0.241N	P=0.546N	P=0.279N
Cochran-Armitage test	P=0.143N		
Fisher exact test		P=0.483N	P=0.173N
All Organs: Benign or Malignant Tumors			
Overall rates	31/46 (67%)	26/49 (53%)	21/50 (42%)
Adjusted rates	81.4%	75.1%	58.9%
Terminal rates	23/30 (77%)	15/23 (65%)	11/25 (44%)
First incidence (days)	426	491	473
Life table tests	P=0.141N	P=0.537	P=0.168N
Logistic regression tests	P=0.036N	P=0.162N	P=0.035N
Cochran-Armitage test	P=0.011N		
Fisher exact test		P=0.112N	P=0.011N

NOT FOR DISTRIBUTION OR ATTRIBUTION

Board Draft

Lesions in Female Mice

D-27

TABLE D3

Statistical Analysis of Primary Neoplasms in Female Mice in the 2-Year Inhalation Study of Talc (continued)

(T) Terminal sacrifice

^a Number of tumor-bearing animals/number of animals examined. Denominator is number of animals examined microscopically for adrenal gland, bone marrow, brain, clitoral gland, epididymis, gallbladder (mouse), heart, kidney, larynx, liver, lung, nose, ovary, pancreas, parathyroid gland, pituitary gland, preputial gland, prostate gland, salivary gland, spleen, testes, thyroid gland, and urinary bladder; for other tissues, denominator is number of animals necropsied.

^b Kaplan-Meier estimated tumor incidence at the end of the study after adjustment for intercurrent mortality

^c Observed incidence at terminal kill

^d Beneath the control incidence are the P values associated with the trend test. Beneath the dosed group incidence are the P values corresponding to pairwise comparisons between the controls and that dosed group. The life table analysis regards tumors in animals dying prior to terminal kill as being (directly or indirectly) the cause of death. The logistic regression tests regard these lesions as nonfatal. The Cochran-Armitage and Fisher exact tests compare directly the overall incidence rates. For all tests, a negative trend or a lower incidence in a dose group is indicated by N.

^e Not applicable; no tumors in animal group

^f Value of statistic cannot be computed.

Board Draft

NOT FOR DISTRIBUTION OR ATTRIBUTION

D-28

Talc, NTP TR 421

TABLE D4

Summary of the Incidence of Nonneoplastic Lesions in Female Mice in the 2-Year Inhalation Study of Talc^a

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Disposition Summary			
Animals initially in study	50	50	50
Early deaths			
Moribund	2	4	4
Natural deaths	17	21	21
Survivors			
Terminal sacrifice	30	23	25
Missing	1	1	
Culled		1	
Animals examined microscopically	46	48	50
Alimentary System			
Intestine large, cecum	(35)	(29)	(34)
Hyperplasia, lymphoid			1 (3%)
Serosa, inflammation, suppurative		1 (3%)	
Intestine large, colon	(38)	(33)	(32)
Serosa, inflammation, suppurative		2 (6%)	
Intestine small, duodenum	(27)	(25)	(27)
Ulcer, focal	1 (4%)		
Mucosa, atrophy	2 (7%)	6 (24%)	4 (15%)
Serosa, inflammation, suppurative		2 (8%)	
Intestine small, ileum	(33)	(27)	(31)
Hyperplasia, lymphoid	1 (3%)	1 (4%)	
Mucosa, atrophy	4 (12%)	6 (22%)	6 (19%)
Peyer's patch, necrosis			1 (3%)
Serosa, inflammation, suppurative		2 (7%)	1 (3%)
Intestine small, jejunum	(33)	(28)	(31)
Mucosa, atrophy	2 (6%)	7 (25%)	3 (10%)
Serosa, inflammation, suppurative		2 (7%)	1 (3%)
Liver	(46)	(46)	(50)
Eosinophilic focus		1 (2%)	
Fibrosis, focal		1 (2%)	
Focal cellular change	2 (4%)	3 (7%)	1 (2%)
Hematopoietic cell proliferation	1 (2%)	2 (4%)	2 (4%)
Inflammation, focal	1 (2%)	2 (4%)	1 (2%)
Necrosis, focal	1 (2%)	2 (4%)	2 (4%)
Pigmentation, hemosiderin, focal		1 (2%)	
Centrilobular, degeneration		1 (2%)	
Centrilobular, necrosis, coagulative		1 (2%)	
Serosa, inflammation, suppurative	4 (9%)	7 (15%)	5 (10%)
Sinusoid, inflammation	2 (4%)		
Pancreas	(42)	(39)	(44)
Inflammation, focal			2 (5%)
Acinus, hyperplasia, focal	1 (2%)		
Serosa, inflammation, suppurative	1 (2%)	5 (13%)	4 (9%)
Salivary glands	(46)	(48)	(50)
Inflammation, acute		1 (2%)	1 (2%)
Stomach	(45)	(45)	(50)
Serosa, inflammation, granulomatous			1 (2%)
Serosa, inflammation, suppurative	1 (2%)	2 (4%)	1 (2%)
Stomach, forestomach	(45)	(45)	(50)
Hyperplasia, mast cell, focal			1 (2%)
Hyperplasia, squamous, focal	2 (4%)	4 (9%)	2 (4%)
Ulcer, focal	1 (2%)	3 (7%)	

NOT FOR DISTRIBUTION OR ATTRIBUTION

Board Draft

Lesions in Female Mice

D-29

TABLE D4
Summary of the Incidence of Nonneoplastic Lesions in Female Mice in the 2-Year Inhalation Study of Talc (continued)

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Alimentary System (continued)			
Stomach, glandular	(45)	(39)	(46)
Inflammation, suppurative			1 (2%)
Ulcer, focal	1 (2%)	1 (3%)	
Forestomach, inflammation, focal		1 (3%)	2 (4%)
Cardiovascular System			
Heart	(46)	(48)	(50)
Myocardium, degeneration, focal	1 (2%)		
Myocardium, inflammation, focal		1 (2%)	
Myocardium, mineralization, focal	1 (2%)		
Pericardium, inflammation, suppurative	1 (2%)	2 (4%)	4 (8%)
Endocrine System			
Adrenal gland	(46)	(45)	(50)
Capsule, inflammation, suppurative	4 (9%)	7 (16%)	5 (10%)
Corticomedullary junction, hemorrhage	2 (4%)	3 (7%)	1 (2%)
Spindle cell, hyperplasia	46 (100%)	45 (100%)	47 (94%)
Adrenal gland, cortex	(46)	(44)	(50)
Cyst	2 (4%)	3 (7%)	
Inflammation, suppurative, focal			1 (2%)
Vacuolization cytoplasmic, focal	3 (7%)		
Adrenal gland, medulla	(41)	(43)	(45)
Hyperplasia, focal	2 (5%)		
Parathyroid gland	(23)	(18)	(25)
Hyperplasia	1 (4%)		
Pituitary gland	(42)	(42)	(48)
Cyst	2 (5%)		
Hemorrhage, focal	2 (5%)		
Hyperplasia, focal	2 (5%)		
Pigmentation, lipofuscin	1 (2%)		
Thyroid gland	(43)	(47)	(49)
Cyst	2 (5%)		
Inflammation, acute, focal			2 (4%)
C-cell, hyperplasia	1 (2%)		1 (2%)
Follicular cell, hyperplasia	9 (21%)	12 (26%)	10 (20%)
General Body System			
Tissue NOS	(4)	(1)	(2)
Thrombosis, chronic	1 (25%)		
Genital System			
Ovary	(38)	(43)	(46)
Abscess	4 (11%)	10 (23%)	7 (15%)
Cyst	6 (16%)	11 (26%)	10 (22%)
Thrombosis	1 (3%)	2 (5%)	
Uterus	(44)	(45)	(49)
Angiectasis			1 (2%)
Hyperplasia, histiocytic, focal			1 (2%)
Metaplasia, squamous		1 (2%)	
Thrombosis	1 (2%)		
Endometrium, hyperplasia, cystic	34 (77%)	30 (67%)	35 (71%)
Mucosa, inflammation, suppurative	3 (7%)	7 (16%)	4 (8%)
Serosa, inflammation, suppurative	1 (2%)	4 (9%)	2 (4%)

Board Draft

NOT FOR DISTRIBUTION OR ATTRIBUTION

D-30

Talc, NTP TR 421

TABLE D4

Summary of the Incidence of Nonneoplastic Lesions in Female Mice in the 2-Year Inhalation Study of Talc (continued)

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Hematopoietic System			
Bone marrow	(41)	(43)	(45)
Hyperplasia	1 (2%)	4 (9%)	5 (11%)
Myelofibrosis	28 (68%)	23 (53%)	27 (60%)
Myeloid cell, hyperplasia	1 (2%)	6 (14%)	3 (7%)
Lymph node	(46)	(46)	(49)
Iliac, hyperplasia, lymphoid			1 (2%)
Iliac, inflammation	1 (2%)		1 (2%)
Pancreatic, hyperplasia, lymphoid	1 (2%)		1 (2%)
Pancreatic, infiltration cellular, mixed cell			1 (2%)
Pancreatic, follicular, necrosis			1 (2%)
Renal, hyperplasia, lymphoid		2 (4%)	2 (4%)
Renal, infiltration cellular, mixed cell			1 (2%)
Renal, inflammation	1 (2%)	1 (2%)	1 (2%)
Renal, follicular, necrosis		2 (4%)	1 (2%)
Lymph node, bronchial	(38)	(37)	(43)
Hyperplasia, histiocytic		25 (68%)	39 (91%)
Hyperplasia, lymphoid		16 (43%)	20 (47%)
Infiltration cellular, mixed cell	1 (3%)		
Inflammation, acute	1 (3%)	1 (3%)	1 (2%)
Lymph node, mandibular	(35)	(38)	(36)
Cyst			1 (3%)
Depletion lymphoid	1 (3%)		
Hyperplasia, histiocytic	1 (3%)		
Hyperplasia, lymphoid		1 (3%)	3 (8%)
Hyperplasia, plasma cell	1 (3%)		
Infiltration cellular, mixed cell		1 (3%)	
Inflammation		1 (3%)	1 (3%)
Follicular, necrosis		1 (3%)	
Lymph node, mediastinal	(13)	(17)	(14)
Hyperplasia, histiocytic	1 (8%)	3 (18%)	2 (14%)
Hyperplasia, lymphoid		1 (6%)	2 (14%)
Infiltration cellular, mixed cell	1 (8%)		
Lymph node, mesenteric	(35)	(31)	(37)
Depletion lymphoid		1 (3%)	2 (5%)
Hematocyst			1 (3%)
Hyperplasia, histiocytic		1 (3%)	1 (3%)
Hyperplasia, lymphoid		2 (6%)	2 (5%)
Hyperplasia, plasma cell			1 (3%)
Infiltration cellular, mixed cell	5 (14%)	5 (16%)	5 (14%)
Inflammation		2 (6%)	1 (3%)
Follicular, necrosis	3 (9%)	12 (39%)	7 (19%)
Spleen	(45)	(44)	(50)
Congestion	2 (4%)		
Hematopoietic cell proliferation	8 (18%)	12 (27%)	10 (20%)
Hyperplasia, lymphoid	5 (11%)	8 (18%)	6 (12%)
Inflammation, suppurative	2 (4%)		1 (2%)
Capsule, inflammation, suppurative	2 (4%)	3 (7%)	3 (6%)
Lymphoid follicle, depletion lymphoid	2 (4%)	3 (7%)	5 (10%)
Lymphoid follicle, necrosis	2 (4%)	4 (9%)	2 (4%)
Thymus	(40)	(40)	(41)
Cyst	2 (5%)	2 (5%)	
Hyperplasia, plasma cell		1 (3%)	
Inflammation, suppurative		1 (3%)	1 (2%)
Necrosis	3 (8%)	5 (13%)	
Cortex, depletion lymphoid	8 (20%)	12 (30%)	15 (37%)

NOT FOR DISTRIBUTION OR ATTRIBUTION

Board Draft

Lesions in Female Mice

D-31

TABLE D4

Summary of the Incidence of Nonneoplastic Lesions in Female Mice in the 2-Year Inhalation Study of Talc (continued)

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Integumentary System			
Mammary gland	(41)	(45)	(48)
Abscess			1 (2%)
Edema	1 (2%)		
Skin	(46)	(46)	(50)
Alopecia	2 (4%)	2 (4%)	
Musculoskeletal System			
Bone	(46)	(48)	(50)
Periosteum, femur, proliferation connective tissue	1 (2%)		
Nervous System			
Brain	(46)	(48)	(50)
Hydrocephalus		2 (4%)	
Mineralization, focal	36 (78%)	33 (69%)	29 (58%)
Respiratory System			
Larynx	(42)	(43)	(48)
Inflammation, acute	1 (2%)		
Lung	(46)	(48)	(50)
Congestion	1 (2%)	3 (6%)	
Hyperplasia, histiocytic			1 (2%)
Hyperplasia, macrophage	2 (4%)	45 (94%)	43 (86%)
Inflammation, chronic active		25 (52%)	38 (76%)
Metaplasia, osseous, focal	1 (2%)		
Alveolar epithelium, hyperplasia, focal			1 (2%)
Perivascular, inflammation, suppurative		3 (6%)	1 (2%)
Pleura, inflammation, suppurative	1 (2%)	2 (4%)	5 (10%)
Nose	(46)	(46)	(50)
Cytoplasmic alteration, focal	29 (63%)	37 (80%)	40 (80%)
Developmental malformation	1 (2%)		
Erosion, focal	3 (7%)		1 (2%)
Inflammation, acute	6 (13%)	4 (9%)	5 (10%)
Ulcer, focal	1 (2%)		
Special Senses System			
Eye		(1)	
Inflammation, suppurative		1 (100%)	
Harderian gland	(2)	(2)	(1)
Inflammation, suppurative		1 (50%)	
Urinary System			
Kidney	(46)	(46)	(50)
Casts protein		2 (4%)	
Infarct	1 (2%)	1 (2%)	
Inflammation, focal	1 (2%)	1 (2%)	1 (2%)
Metaplasia, osseous, focal	1 (2%)		2 (4%)
Nephropathy, chronic	1 (2%)	1 (2%)	
Capsule, inflammation, suppurative	3 (7%)	6 (13%)	5 (10%)
Renal tubule, hyperplasia, focal		1 (2%)	

Board Draft

NOT FOR DISTRIBUTION OR ATTRIBUTION

D-32

Talc, NTP TR 421

TABLE D4

Summary of the Incidence of Nonneoplastic Lesions in Female Mice in the 2-Year Inhalation Study of Talc (continued)

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Urinary System (continued)			
Urinary bladder	(44)	(40)	(41)
Serosa, inflammation, suppurative		3 (8%)	3 (7%)
Submucosa, hyperplasia, lymphoid	1 (2%)		
Submucosa, inflammation, suppurative			1 (2%)

^a Incidences are expressed as the ratio of animals with lesions to the number of animals examined microscopically at the site.

NOT FOR DISTRIBUTION OR ATTRIBUTION

Board Draft

E-1

APPENDIX E ORGAN WEIGHTS AND ORGAN-WEIGHT-TO-BODY-WEIGHT RATIOS

TABLE E1	Organ Weights and Organ-Weight-to-Body-Weight Ratios for Rats at the 6-Month Interim Evaluation in the Lifetime Inhalation Study of Talc	E-2
TABLE E2	Organ Weights and Organ-Weight-to-Body-Weight Ratios for Rats at the 11-Month Interim Evaluation in the Lifetime Inhalation Study of Talc	E-3
TABLE E3	Organ Weights and Organ-Weight-to-Body-Weight Ratios for Rats at the 18-Month Interim Evaluation in the Lifetime Inhalation Study of Talc	E-4
TABLE E4	Organ Weights and Organ-Weight-to-Body-Weight Ratios for Rats at the 24-Month Interim Evaluation in the Lifetime Inhalation Study of Talc	E-5
TABLE E5	Organ Weights and Organ-Weight-to-Body-Weight Ratios for Rats at the Termination of the Lifetime Inhalation Study of Talc	E-6
TABLE E6	Organ Weights and Organ-Weight-to-Body-Weight Ratios for Mice at the 6-Month Interim Evaluation in the 2-Year Inhalation Study of Talc	E-7
TABLE E7	Organ Weights and Organ-Weight-to-Body-Weight Ratios for Mice at the 12-Month Interim Evaluation in the 2-Year Inhalation Study of Talc	E-8
TABLE E8	Organ Weights and Organ-Weight-to-Body-Weight Ratios for Mice at the 18-Month Interim Evaluation in the 2-Year Inhalation Study of Talc	E-9
TABLE E9	Organ Weights and Organ-Weight-to-Body-Weight Ratios for Mice at the Termination of the 2-Year Inhalation Study of Talc	E-10

Board Draft

NOT FOR DISTRIBUTION OR ATTRIBUTION

E-2

Talc, NTP TR 421

TABLE E1
Organ Weights and Organ-Weight-to-Body-Weight Ratios for Rats at the 6-Month Interim Evaluation
in the Lifetime Inhalation Study of Talc^a

	0 mg/m ³	6 mg/m ³	18 mg/m ³
Male			
n	3	3	3
Necropsy body wt	379 ± 2	365 ± 9	351 ± 4*
Brain			
Absolute	2.061 ± 0.073	1.962 ± 0.035	1.964 ± 0.041
Relative	5.44 ± 0.22	5.38 ± 0.22	5.59 ± 0.10
Heart			
Absolute	1.087 ± 0.024	0.984 ± 0.047	1.008 ± 0.018
Relative	2.87 ± 0.07	2.69 ± 0.07	2.87 ± 0.03
R. Kidney			
Absolute	1.203 ± 0.055	1.155 ± 0.028	1.143 ± 0.025
Relative	3.17 ± 0.16	3.16 ± 0.01	3.25 ± 0.04
Liver			
Absolute	12.969 ± 0.336	11.658 ± 0.483	11.644 ± 0.613
Relative	34.20 ± 0.79	31.89 ± 0.65	33.11 ± 1.43
Lungs			
Absolute	1.196 ± 0.049	1.201 ± 0.060	1.600 ± 0.073**
Relative	3.15 ± 0.11	3.29 ± 0.19	4.55 ± 0.19**
Female			
n	3	3	3
Necropsy body wt	216 ± 10	210 ± 5	212 ± 7
Brain			
Absolute	1.801 ± 0.020	1.800 ± 0.030	1.860 ± 0.031
Relative	8.39 ± 0.33	8.57 ± 0.28	8.82 ± 0.39
Heart			
Absolute	0.679 ± 0.023	0.691 ± 0.031	0.716 ± 0.055
Relative	3.16 ± 0.11	3.29 ± 0.13	3.38 ± 0.20
R. Kidney			
Absolute	0.700 ± 0.043	0.775 ± 0.025	0.751 ± 0.030
Relative	3.25 ± 0.17	3.69 ± 0.10	3.55 ± 0.07
Liver			
Absolute	7.579 ± 0.502	7.253 ± 0.172	6.875 ± 0.409
Relative	35.13 ± 1.09	34.51 ± 0.33	32.47 ± 1.21
Lungs			
Absolute	1.006 ± 0.112	0.986 ± 0.064	1.090 ± 0.010
Relative	4.71 ± 0.65	4.69 ± 0.29	5.17 ± 0.21

* Significantly different (P≤0.05) from the control group by Williams' or Dunnett's test

** P≤0.01

^a Organ weights and body weights are given in grams; organ-weight-to-body-weight ratios are given as mg organ weight/g body weight (mean ± standard error)

NOT FOR DISTRIBUTION OR ATTRIBUTION

Board Draft